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Kalb, L.; Loeber, R.

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REVIEW ARTICLE

Child Disobedience and Noncompliance: A Review

Larry M. Kalb, BA*, and Rolf Loeber, PhD‡

ABSTRACT. Child disobedience and noncompliance is a recurring problem frequently brought to the attention of pediatricians and others working with children and their parents. This article reviews empirical studies concerning childhood noncompliance. Definitions of noncompliance (also called disobedience) are presented, and observational studies that have measured noncompliance in the laboratory and at home are reviewed. Studies show considerable variability in the prevalence of noncompliance, but demonstrate that it is a frequent problem for parents. Longitudinal data from the Pittsburgh Youth Study are presented to more closely examine the onset and stability of noncompliance in childhood and adolescence. Evidence suggests that extreme childhood noncompliance is relatively stable over time, peaking slightly during early adolescence and decreasing during late adolescence. Studies indicate that for some children noncompliance predicts aggression and externalizing problems. Antecedents of noncompliance including parental discipline techniques and child characteristics are reviewed. Parent training programs designed to reduce noncompliance are described, and the effectiveness of such programs is examined. *Pediatrics* 2003;111:641–652; *noncompliance, disobedience, parental discipline techniques, parental training programs, externalizing problems.*

ABBREVIATIONS. CBCL, Child Behavior Checklist; PYS, Pittsburgh Youth Study; OR, odds ratio; CI, confidence interval.

Child disobedience and noncompliance is viewed by practitioners and researchers as a key element of child and adolescent problem behavior. Compliance training often is a key component of therapies for disruptive behavior disorders.[1,2] Parents also tend to view persistent noncompliance of their child as especially troublesome. Child noncompliance is one of the most frequent reasons for the psychiatric referral of young children.[3] Since the early 1970s, researchers have given childhood noncompliance a good deal of attention, focusing mainly on noncompliance in early to middle childhood.[4,5] This article reviews empirical studies on noncompliance from childhood through adolescence with the goal of answering some of the key questions often raised by practioners. We begin by discussing what is meant by noncompliance and how it manifests itself differently in childhood and adolescence. We then review findings on the prevalence, onset, and stability of noncompliance in both clinic-referred and normal populations. We then ascertain whether noncompliance is associated with concurrent or future childhood problems. Next, factors that have been associated with increased or decreased noncompliance in childhood are reviewed. Finally, we describe and discuss the effectiveness of treatment programs that have been devised to reduce children's noncompliance.

From the *University of Pittsburgh, Pittsburgh, Pennsylvania; and ‡Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

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Address correspondence to Larry Kalb, c/o Rolf Loeber, PhD, University of Pittsburgh, Thomas Detre Hall/Psychiatry, 3811 O'Hara St, Pittsburgh, PA 15213. E-mail: lmkst39@pitt.edu

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DEFINITION

Behavioral noncompliance, also known as defiance or disobedience, refers to those instances when a child either actively or passively, but purposefully, does not perform a behavior that has been requested by a parent or other adult authority figure (eg, a teacher or school bus driver). In all instances, noncompliance is of an interactive nature, requiring an expressed wish by an adult and a child who does not comply. The terms noncompliance and disobedience are usually used interchangeably. However, researchers have stressed the importance of distinguishing noncompliance from defiance.[6] The term defiance, described by Wenar[7] as "negativism for its own sake," refers to overt behaviors such as temper tantrums and whining in response to parental requests, whereas noncompliance is a broader term that can include children's ignoring of parental commands or wishes. Defiance also implies an element of resistance to parental control (ie, saying no just to say no).

Although all children are noncompliant at one time or another, our interest in this article is with what we call persistent noncompliance, or noncompliance that is perceived by an adult as problematic in intensity, frequency, and duration. Different children will be more or less compliant in different situations, but our concern in this study is mostly with those children who are noncompliant in multiple environments. Hence, childhood noncompliance that is specific to a given setting such as schools or hospitals will not be reviewed here. Children's noncompliance to adults' instructions only is reviewed here, and not children's noncompliance with peers or older children such as babysitters. Furthermore, although noncompliance across the age span of children can manifest quite differently, we suggest that

noncompliance reflects an underlying attitude of willingness to break set rules, whether they have been set forth by an authority figure such as a parent, or society as a whole. It is also proposed that although this willingness to break rules will be expressed differently at different ages, it will remain relatively stable over time.

Despite the fact that the manifestations of noncompliance vary considerably throughout development, we propose that children who are persistently noncompliant, regardless of age, are impaired in a number of different areas. Table 1 presents these areas in a child's life in which noncompliance at any age may have a negative impact. The fact that a child is persistently noncompliant will add stress to their social relationships with adults and their peers. Persistent noncompliance not only impairs day-to-day interactions with adults and other children, but also the overall quality of those relationships. Also, because compliance in the school setting is so closely related to the teacher-child relationship, persistent noncompliance can also have detrimental effects on academic achievement. It may also put a child at greater risk of physical injury.

Changes in the Manifestations of Noncompliance With Age

Manifestations of noncompliance vary greatly as a function of a child's age, physical abilities, and opportunities for noncompliance. For example, a 4-year-old child who is compliant in a small office containing only a bit of furniture may become quite noncompliant while accompanying a parent through a candy aisle in a local supermarket. Likewise, an 8-year-old child who is not allowed to leave the house unaccompanied by an adult would most likely be viewed as more noncompliant than the child who is allowed to come and go as he or she pleases. We stress that different settings and rules may elicit or inhibit disobedience, and that factors both internal and external to the child can influence noncompliance. The manifestations of noncompliance change as children grow older. A 2-year-old child may continuously push and pull the controls on a television set after being told several times to stop, while at 16 years that same child may fail repeatedly to comply with his or her designated curfew. Although these 2 types of noncompliance are qualitatively different, we postulate that the underlying willingness to go against parental limits is essentially the same.

TABLE 1. Criteria for Impairment Associated With Noncompliance in Childhood and Adolescence

- Child noncompliance is problematic for at least some adults (parents or teachers) in the child's life, making interactions difficult and stressful for at least a 6-month period.
- Child noncompliance reduces a child's ability to participate in structured activities including games, sports, and outings with other children.
- Child noncompliance creates stressful interactions and relationships with children who are more compliant.
- Child noncompliance disrupts academic progress due to inability to follow directions and follow classroom procedures.
- Child noncompliance may place a child at risk for physical injury (especially young children).

The ability of children to refuse parental demands first appears in infancy with the development of motor control. Although there is little research on infant compliance, Lamb's[8] review of the attachment literature indicates that infants who are categorized as securely attached may be more compliant than those infants nonsecurely attached. During the toddler years, many parents report their children as being excessively noncompliant.[9] Observation studies have shown that noncompliance indeed seems to increase during the toddler years, undoubtedly a time when autonomous thought and expression emerge, but then it begins to subside as most children prepare to enter kindergarten.[10,11]

As manifestations of children's noncompliance change with age, parents will also alter their disciplining techniques. For instance, one cross-sectional study with a sample of 1- to 3-year-olds found that maternal control strategies shifted from physical to verbal forms of control with age.[12] Furthermore, maternal reprimands also tend to decrease from toddlerhood to 5 years.[13] As children progress from infancy and early childhood into middle childhood, parental requests become increasingly more complex. Where previously parents might have issued simple instructions such as "don't touch the TV," they are now delivering much more complex commands that often require the completion of several smaller tasks (eg, "clean your room"). As children grow older they are not only expected to perform sequences of behaviors to achieve compliance, but they are also increasingly expected to internalize the wishes of the parent and to do things without being told. Eventually the child is also expected to comply with requests of the parent in settings where the parent is absent.

During early childhood parents begin to use more reasoning when instructing children. It has been suggested that reasoning supplies children with an internal motivation for compliance by helping them internalize the benefits of complying with certain commands, in contrast to power assertions that provide external motivation only.[14] As children reach school age, parents usually report that noncompliance becomes less of a problem. However, for a number of parents, noncompliance continues to be of concern or later resurfaces as a problem. Kuczynski et al[12] found that direct defiance decreased with age and similar findings have also been reported in other studies.[15,16] Kuczynski et al[12] also reported that more elaborate forms of disobedience (eg, negotiating with the parent to perform the desired behavior at a later time) increased with age, and that 5-year-olds who used more elaborate forms of noncompliance were more skillful in persuading their mothers, suggesting that some forms of noncompliance such as negotiation constitute positive forms of social problem-solving.

Relatively little research has been undertaken on noncompliance in late childhood and adolescence, despite the fact that parents of older children and adolescents often find noncompliance to be problem-

atic. In part, this is because the clean-up task normally used by investigators with preschoolers to measure noncompliance is inappropriate for children older than ~5 years. Moreover, it is difficult to devise age-appropriate observational measures of compliance in school-aged children. Thus, with regards to the sequences of moment-to-moment parent-child interactions, it is difficult to make firm conclusions regarding the development of noncompliance beyond middle childhood. This issue is further complicated by the fact that as children grow older they are increasingly expected to internalize rules and requests, in order that they will obey the wishes of their parents even when their parents are not around. Although researchers have begun to explore the relationship between compliance and internalization in young children,[6] little has been done to examine this relationship in older children and adolescence.

PREVALENCE AND STABILITY

Prevalence

We examined prevalence rates of noncompliance from 6 large-scale, cross-sectional studies[9,17–21] and 1 longitudinal study.[22] Most studies assessed the prevalence rate of noncompliance in children by means of ratings. These measures have been used extensively to study parent-child interactions as well as child behavior. The most widely used rating scale containing a simple measure of child disobedience is the Child Behavior Checklist (CBCL)[17,21], which has been shown to have high test-retest reliability.[23] The CBCL asks parents to rate how disobedient their child has been at home and at school over the past 6 months. Other rating scales used in the studies reviewed here were generally of the same nature as the CBCL.

When interpreting the results of these studies, it should be kept in mind that what is considered to be an existing or frequent problem in disobedience will vary from parent to parent. This depends not only on the child's behaviors, but also on the parent's perception of how problematic those behaviors are. Studies reviewed included randomly drawn samples from various geographic areas.[20,21,23] The age groups assessed in the studies varied from below 2 years to 16 years.

Population Samples

Across age groups and gender, a substantial proportion of parents of nonreferred children consider their children to be at least somewhat noncompliant, with parent-reported prevalence of the existence noncompliance between 25% and 65%. These results clearly indicate that a certain amount of noncompliance is normative across age groups. However, a much smaller number of parents reported noncompliance to be a frequent or severe problem. Parent-reported prevalence of noncompliance as a frequent or severe problem ranged from 1%[20] to 9%.[9] These data reflect the results from cross-sectional studies. A weakness of cross-sectional studies is that different youth are included at different ages. For that reason, longitudinal data sets are more optimal because they provide repeated measurement of noncompliance of the same youth over time.

To examine the stability of noncompliance, we will also report in detail on results that were obtained from longitudinal data from the Pittsburgh Youth Study (PYS). This study began in 1987–1988, when 1517 boys, half of whom were at high risk for disruptive and delinquent behavior, were selected from all boys in the first (average age: 7 years), fourth,[10] and seventh grades[13] in the Pittsburgh public schools. Each sample was followed up initially every 6 months, and later every year. Follow-ups reported in this study were conducted over 9 years for the youngest and oldest sample, and 3 years for the middle sample. At each assessment information was gained from the boys' primary caretaker and teacher. Multiple informants (parent and teacher) were used here to attempt to obtain a more accurate picture of a child's noncompliant behavior in the family home and in the school. Both parent and teacher reports have been shown to be predictive of poor outcomes, with teacher reports perhaps being somewhat more predictive than parent reports,[24] and the combination of information from both informants being more predictive than either one alone. Although the PYS over sampled high-risk boys, data presented here was weighted to represent prevalence rates for boys enrolled in public schools. A more detailed description of the characteristics of the participants and the methods used to select them can be found in Loeber et al.[22]

The parent-reported prevalence of male noncom-

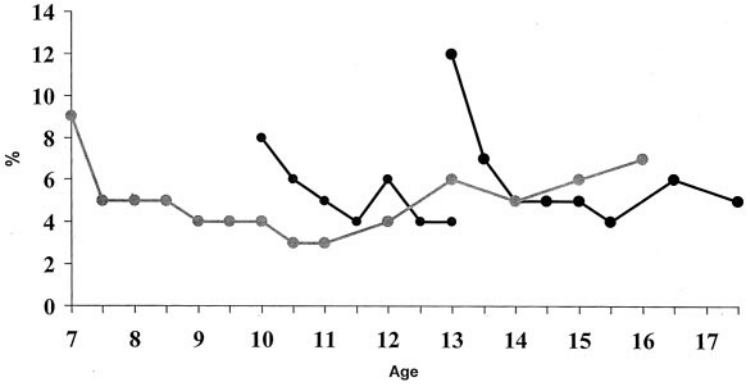

Fig 1. Weighted prevalence of noncompliance (parent report). —•—, Oldest; —•—, Middle; —◎—, Youngest.

pliance between ages 7 to 18 in the PYS is presented in Fig 1. Similar to the population studies previously discussed, the prevalence of noncompliance ranged from 3% to 12%. The prevalence of noncompliance was relatively stable throughout development from childhood into late adolescence and prevalence rates were consistent across samples.

Clinical Populations

Noncompliance is a particularly pervasive problem of children referred to pediatric, psychiatric, and psychological clinics. Achenbach and Edelbrock[23] found that across gender and age groups, the percentage of clinic children who were seen as noncompliant ranged from 65% to 92%, as compared with 10% to 57% in nonclinical samples.[23,25]

Gender and Age Differences

Girls display significantly lower rates of noncompliance in laboratory observations than boys.[12] Likewise, for every epidemiologic study examined and for almost all groups,[20] boys showed either equal or higher rates of noncompliance as compared with girls. Few of these studies statistically evaluated gender differences specifically for noncompliance, and of those that did, only 2[9,21] found significant gender differences, with boys receiving higher ratings. However, overall, gender differences in noncompliance are modest in size.

Studies agree not only that noncompliance is more common at earlier ages, but also that noncompliance as a problem behavior usually decreases with age.[21,23] The fact that noncompliance is more normative in very young children highlights the importance of taking into account the age of the child when parents report having problems with getting their children to comply, and when considering prescribing treatment for noncompliance.

Stability

There are few studies containing data on the stability of child noncompliance. For this reason we used longitudinal data from the PYS which allowed for the assessment of the stability of noncompliance over time. To do this, we examined persistent noncompliance, a dichotomous variable created from both parent and teacher forms of the CBCL. A boy was considered persistently noncompliant if he was reported to be noncompliant by both parent and teacher for multiple time points. A boy was considered to be persistently noncompliant if he was reported to be noncompliant for at least half of the data waves that were available for him.

Noncompliance in either of the first two data waves strongly predicted persistent noncompliance in the remaining data waves for all three samples. Stability of noncompliance was quite high for all three samples with the likelihood of being rated as persistently noncompliant being odds ratio (OR) = 6.8 (95% confidence interval [CI]: 3.6–12.6), OR = 9.8 (95% CI: 5.5–17.2), and OR = 10.2 (95% CI: 5.3–19.6) times higher if a child was seen as noncompliant at the start of the study in the youngest, middle, and oldest samples, respectively. Results also suggested that the older a child is when he is initially rated as noncompliant, the more likely he is to eventually become persistently noncompliant.

The prevalence of persistent noncompliance among boys in the PYS, initially rated as compliant or noncompliant at the start of the study, is presented in Fig 2. Just under half (40%–44%) of boys who were initially rated at the start of the study as noncompliant continued to be rated as noncompliant for at least half of the remaining data waves of the study, demonstrating the stability of noncompliance. Conversely, Fig 3 presents prevalence of noncompliance at the start of the study among children who in later data waves were rated as either persistently noncompliant or not. Across samples, of those children who were persistently noncompliant, between 38% and 64% were seen as noncompliant at the start of the study, highlighting that most older children and adolescents who are persistently noncompliant could be identified at one time point in middle childhood and early adolescence. Taken together, these results show that when noncompliance is a problem for a boy at any time after 7 years, that child is at a much greater risk of continuing to have problems with noncompliance in the future than compliant children. Consequently, because noncompliance so frequently persists throughout childhood and into adolescence, it is essential to recognize the importance of treating noncompliance when it is initially presented to practitioners.

NONCOMPLIANCE AS A PREDICTOR OF DEVIANT BEHAVIOR

Pathways From Noncompliance to Deviant Behaviors

Correlational evidence suggests that noncompliance is concurrently associated with both aggression and antisocial behavior throughout childhood.[26,27] However, few studies have examined the directionality between noncompliance and more serious antisocial behaviors. Keenan and Shaw[28] conducted a longitudinal study using a clean-up task to measure noncompliance in a sample of preschool children. For boys, noncompliance at 10 months predicted aggression 6 months later, but the relationship was less strong for girls. In a further follow-up study using this sample, it was found that infant noncompliance

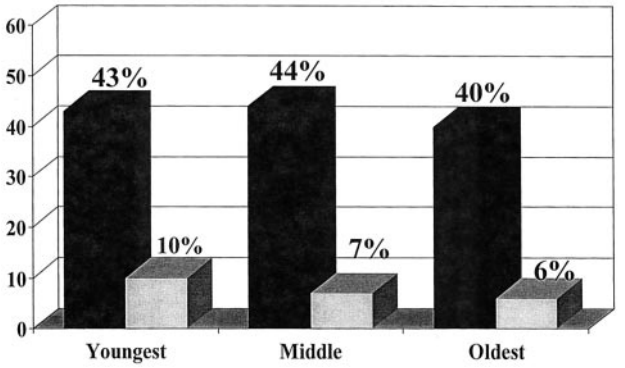

Fig 2. Prevalence of persistent noncompliance among children compliant or noncompliant at start of the study. ■, noncompliant; ▨, compliant.

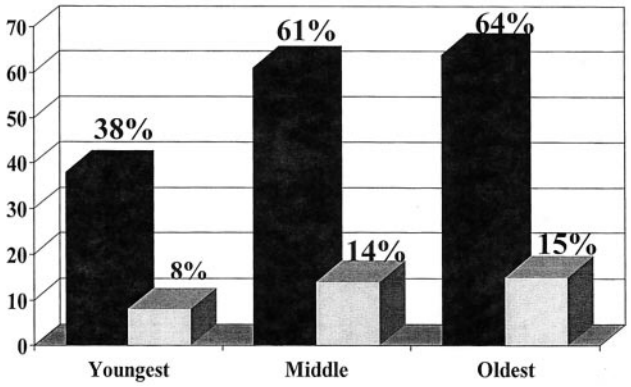

Fig 3. Prevalence of noncompliance at start of study among children persistently noncompliant or not. ■, persisters; ▨, non-persisters.

was predictive of externalizing problems for both boys and girls at 3 years.[29] In a similar study examining the early development of externalizing problems, Shaw et al[30] followed 130 low-income mother-infant dyads longitudinally. Noncompliance as measured by observed mother-child interactions at 24 months predicted externalizing problems at 42 months in boys and girls. Kuczynski and Kochanska[15] measured noncompliance to maternal requests of both depressed and nondepressed mothers at 2 different time periods. These investigators found that most forms of noncompliance did not lead to negative outcomes. However, direct defiance did predict later maternal ratings of behavior problems.

How does noncompliance fit in with the development of other problem behaviors? Are there developmental pathways of disruptive behavior, including noncompliance, which lead to delinquency? Answers to these questions are highly relevant for clinicians who attempt to discriminate which noncompliant children should receive treatment. Early identification allows for early intervention, and intervention strategies require a thorough understanding of the stability and predictability of antecedents of serious antisocial behavior so that timely and cost-effective methods may be appropriately implemented.[31] Over the last decade, researchers have applied different developmental trajectories with varying degrees of cumulative risk at each age point to both the prediction and prevention of antisocial behavior.[32]

Figure 4 presents one such model designed to describe developmental pathways that eventually lead to serious delinquency as proposed by Loeber et al.[33] This Pathways Model not only highlights the idea that noncompliance is a precursor of later serious antisocial behavior, it also stresses the need to focus on behavior problems that continue to occur over time, despite variations in how they are manifest. In addition, children who display noncompliant and defiant behavior are at risk for later avoidance of authority figures, including truancy and running away from home, which in turn places them at increased risk for progressing along overt and covert pathways that include more serious behavior. Thus, this model stresses the importance of investigating unwanted behaviors that appear early in development, longitudinally, and that noncompliance in a minority of children is a precursor to more serious disruptive and delinquent behavior including aggression, violence, and covert acts such as theft.[33,34] There has been a substantial amount of evidence to support this model.[35]

There is a very close relationship between noncompliance, aggression, and norm-breaking behavior in older children. Hämäläinen and Pulkkinen[36] found that disobedience at age 8 was correlated 0.60 with aggression at 8 years, which in turn was

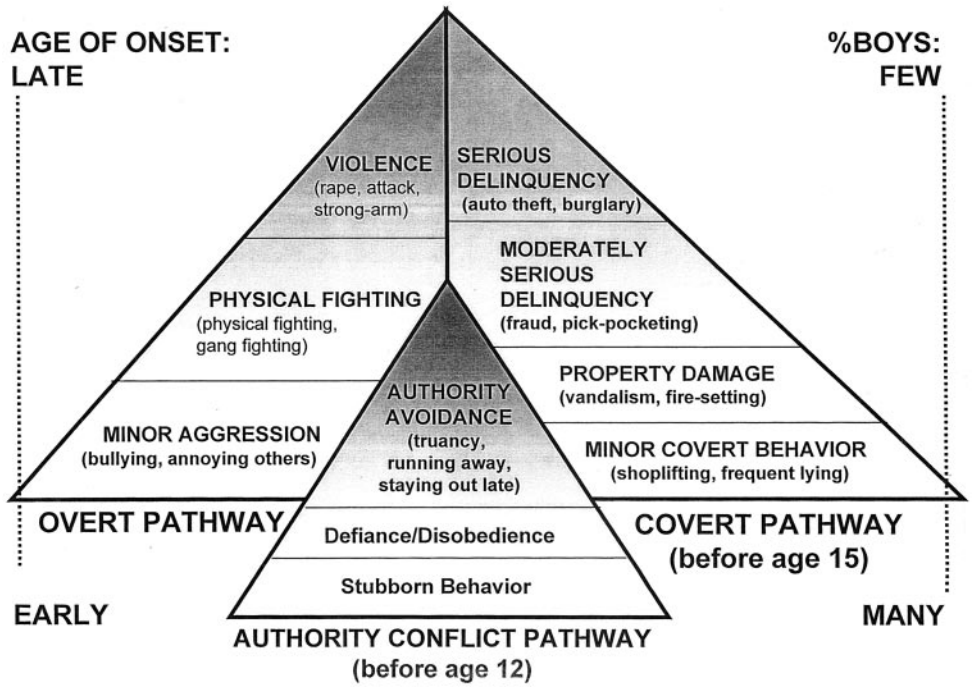

Fig 4. Developmental pathways to serious and violent offending.

correlated 0.41 with norm-breaking behavior at 14 years. Aggression at 14 years was concurrently correlated 0.44 with norm-breaking behavior. Evidence from the PYS also suggests that noncompliance in childhood is associated with later delinquency.[37] Findings from this study revealed that children who were seen as noncompliant by their parents and teachers at the beginning of the study were roughly 4 times more likely to be adjudicated delinquent in adolescence than those boys who were viewed as compliant. These results highlight the importance of identifying children early in development who are highly noncompliant, in order that appropriate intervention services may be employed.

It is important to note that because so many parents view their toddlers as extremely noncompliant, it is less likely that elevated levels of noncompliance before school-age would predict poor outcomes in later childhood. However, if persistent noncompliance is combined with other behavioral problems such as aggression, hyperactivity, and impulsivity, this may signal increased risk for more severe and long-lasting problems.[38] It is also likely that as children grow older, normative tasks that require increased levels of self-control allow problems with compliance to become more salient and also increase risk for other externalizing problems.[39] Consequently, practitioners should pay close attention to noncompliance that is seen in children beyond early childhood or that is accompanied by other behavioral problems such as aggression, hyperactivity, and/or impulsivity.

THE ROLE OF THE PARENT AND THE CHILD IN NONCOMPLIANCE

Antecedents and Consequences

The influence of both antecedent behavior[40] and antecedent events[41] on child noncompliance has been widely studied. In this article, we will focus on 2 types of antecedents, those that reside within the parent and those that reside within the child. We will also discuss how various consequences can influence child noncompliance.

Parental Discipline Techniques

Most child psychologists recognize that parental behavior may constitute an influential antecedent to child noncompliance.[42–44] Schaffer and Cook[45] labeled those behaviors that parents use to influence their child's behavior as control techniques and defined them as "all those behaviors that an individual employs to change the ongoing course of another person's activity."[45] Parental factors such as maternal cooperation and acceptance[45,46] and maternal responsiveness[47,48] have been shown to be associated with decreased child noncompliance.

Adults, especially parents, play a key role in deciding what is expected of children and how those expectations are conveyed. If these expectations are appropriate, parents must take into account a child's ability to execute increasingly complex tasks, when this ability may change as a function of a child's age, physical and cognitive skills, and opportunities for compliance. Parents will differ in their frequency of requests, when and how they deliver requests, and what they perceive as an appropriate amount of compliance. This in turn will influence both the child's behavior and the parents' perception thereof. For example, parents who place few demands on their children in essence give them less of an opportunity for noncompliance compared with children who receive many requests. It is important then for the practitioner who is attempting to assess noncompliance to not only ask parents about their perceptions of their child's behavior, but to also assess the level of control that the parent expects from the child.

Parental control techniques can be both verbal and nonverbal, direct and indirect. Nonverbally, they can consist of such actions such as an angry glance or any form or threat of physical punishment that is meant to be taken as a consequence for noncompliance. To achieve compliance, parents may use incentives such as a later bedtime or impose consequences such as physical punishment, time-out, scolding, or withdrawal of attention if the desired behavior is not performed. A positive correlation has been reported between child compliance and children's anticipation of negative consequences[49] and level of control attempted by a parent.[50]

Physical punishment as a means to gain compliance has been the center of much controversy over the last decade. Approximately 90% of American parents use physical punishment,[51] and research indicates that when parents use it, child compliance increases immediately. Chapman and Zahn-Waxler[52] found that physical coercion was effective alone or when combined with verbal reasoning and verbal prohibition. However, although physical punishment may increase compliance in the short-run, research suggests that in the long run it may actually lead to an increase in noncompliance and may even place a child at risk for more serious behavior problems. Making use of data from a large cross-sectional epidemiologic study, Straus[51] found physical punishment to be associated with delinquency in adolescence and criminal behavior in adults. Physical punishment has also been shown to be associated with future increased substance use, attention-deficit/hyperactivity disorder symptoms, conduct problems, aggression, and depression symptoms.[22] Consequently, the use of physical punishment as a way of decreasing noncompliance is strongly cautioned against.

It is thought that an inconsistent style of discipline leads to the reinforcement of unwanted behaviors in the child,[44] and several studies have found an association between inconsistent discipline and child conduct problems.[42] Disagreement between parents over how and when to discipline their child has also been linked to elevated levels of noncompliance.[53]

Perhaps the most salient way that parental control can be administered is through various forms of verbal instructions, usually referred to as commands. Dumas and Lechowicz[54] conducted a study that involved observing children identified as being noncompliant during their interactions with their parents at home and found that mothers gave some

form of instruction to their child at an average rate of 41.3 instructions per hour while fathers gave only about half as many. This command rate for mothers is similar to rates that were found in an unrestricted laboratory setting.[55] The form of the command is pivotal in determining compliance because the child must first process verbal information before deciding whether or not to comply. Consequently, the way in which a command is presented can greatly influence the child's interpretation of the command. However, observational studies have revealed that parents often give commands that are not specific or clear enough to be accurately understood by the child and that parents often do not allow children ample time to comply with requests.[56,57]

Both developmental psychologists[12,58] and language scholars[59] have made important distinctions between direct commands (those commands that are clearly stated and include a specific behavior that is expected of the child) and indirect commands (polite commands, commands that are implied, suggestions, or commands stated in a question form). Very young children can more easily understand direct than indirect commands. However, older children acquire the skill to respond to indirect commands.[60] Kuczynski et al[12] found indirect commands to be associated with more frequent child refusals than direct commands, and Schaffer and Cook[45] found direct commands led to more compliance than indirect commands. Dumas and Lechowicz[54] found instructions that were aversive or vague increased child-ignoring behavior, and only instructions that included some type of physical contact between the parent and child led to increased noncompliance. These findings clearly demonstrate the importance of making requests to children clear and age appropriate while also considering the context (such as how tired or hungry the child may be) in which they are delivered. Other factors such as the tone and loudness of voice in which the command is given may also influence compliance levels.

Other forms of parental behavior such as verbally assisting a child during a task also appear to facilitate child noncompliance.[43] Facial expressions, remaining within close proximity of the child, or giving the child encouragement may also influence a child's willingness to comply. Incentives such as allowing the child to stay up past their bedtime as a reward for compliance can also be used, as well as imposing consequences on the child if the desired behavior is not performed. Consequences can include but are not limited to physical punishment (spanking), time-out, verbal scolding, early bedtimes, and withdrawal of attention. Chapman and Zahn-Waxler[52] found that the withdrawal of affection or attention, when combined with other disciplinary techniques such as reasoning, verbal prohibition, or physical coercion, was most effective at gaining the compliance of toddler-aged children.

A study by Campbell et al[61] that used a toy clean-up task for preschool children to measure noncompliance found that children's noncompliance was highly associated with negative maternal control. The degree to which a child is already engaged in behavior that approximates the behavior desired by the parent can also affect noncompliance. Schaffer and Cook[45] found that compliance depended heavily on what the child was doing and the child's focus of attention when the directive was given. These findings suggest that parents are more likely to achieve compliance in their children if they monitor them closely. They also suggest that parents should not expect compliance from their young child after issuing a single command. Instead, a sequence of statements or behaviors meant to first direct the child's attention toward the object (or topic) in question, followed by specific instructions for what is expected and needed. The task of the parent is to provide a situation in which a series of commands that are within the child's abilities are used, with close attention being paid to the activity that the child is already engaged in.

Child Characteristics That Influence Parent-Child Interactions Associated With Noncompliance

Beginning in the 1980s, child influences on parent-child interactions began receiving more attention.[62] For example, Grusec and Kuczynski[63] found that mothers' disciplinary responses to hypothetical situations were not consistent across situations, but rather were mostly dependent on the child's behavior. Williams and Forehand[64] coded mother-child interactions in the home and found the best predictor of compliance or noncompliance to be the immediately preceding behavior, and more specifically child compliance or noncompliance.

Several studies show that hyperactive children display higher levels of noncompliance than nonhyperactive children,[65,66] especially between 2 years to 7 years,[67] although mothers of hyperactive children issue more commands than mothers of nonhyperactive children.[66] Mothers of hyperactive children often are less responsive when their child acts appropriately.[67] Attending to requests may be more difficult for hyperactive children with attention problems, making it difficult for them to clearly understand what is being asked of them. High energy levels and impulsivity problems directed at multiple tasks may also reduce a child's capacity to complete any given tasks.

Lytton[68] found that different types of child noncompliance increased different types of parental control efforts. For example, they found that when children damaged objects or pestered a sibling, this increased the likelihood that a parent would respond with verbal reasoning. Lytton[68] concluded that overall the child effects on parents were minimal and that parental discipline techniques are primarily attributable to parental predispositions. However, the influence that child behavior has on parental discipline techniques and consequently on noncompliance needs to be further investigated.

Children need to be able to attend to commands that are being directed toward them and have the capacity to stay on task long enough to complete the requested task. A child needs not only to understand a request, but also how to comply with the request, and what consequences to expect if he or she does

not comply. This may be most important as children grow older and adult requests become increasingly complex. It would be expected then that as children grow older, increased cognitive abilities are needed to evaluate the pros and cons of any given action by accurately assessing unwanted consequences. This may be especially true as consequences move farther away in time from the desired action. This has direct implications for requests that involve school work. For instance, a teacher may ask a child to finish his or her homework assignment that contains several different types of academic problems, and yet view the child as noncompliant if the assignment is not completed in whole. In this instance the child needs to understand numerous types of problems, and may need to be willing to ask for help if it is needed. The child also needs to be able to accurately assess long- and short-term consequences of finishing or not finishing the assignment if he or she is to be properly motivated.

INTERVENTIONS FOR CHILD NONCOMPLIANCE

Most investigators view excessive child noncompliance as the result of less than optimal interactive exchanges between children and parents, and that parents can become the main change agent in this process. Hence, most treatments designed to reduce noncompliant behavior in children have focused on teaching parents specific ways to interact with, and consequently alter, the behavior of their child. Parent training programs make up the largest and most well-researched interventions for noncompliant children.[69] There are many parent training programs, but most bear at least some resemblance to the widely studied parent training program developed by Patterson, Reid, and their colleagues at the Oregon Social Learning Center for children and adolescents (www.oslc.org).[70,71] Parents are initially introduced to the behavioral concepts of the program through two books, *Living with Children*[72] and *Families*.[73] Parents are then guided using a step-by-step approach on how to implement 5 key parenting strategies that form the crux of the program. First, parents are shown how to identify and monitor those child behaviors which are most problematic or disruptive. Next, parents are taught how and when to reinforce desirable behaviors through the use of rewards that may include privileges such as an extended bedtime or extra time to spend with a friend, and also various forms of praise from the parent. Third, parents are shown how to use effective and appropriate response cost discipline techniques such as time-outs, removing privileges, and assigning extra chores. Fourth, parents are encouraged to closely monitor their children both in and outside of the home, knowing where they are at as often as possible and what activities they are engaged in. Finally, parents are taught how to modify the techniques that they have learned to fit their child as different problems arise throughout development.

A second parent training program, "Helping the Noncompliant Child", which targets noncompliant children between 3 years and 8 years was designed by Forehand and McMahon (www.open.org/~westcapt/bp49.htm).[1] This program was designed to teach parents productive and appropriate parenting skills through the use of role-playing and modeling. Parents are first taught to use these skills with their children in a clinic setting while receiving prompting and feedback from the therapist, and later they are then taken into the home. The treatment consists of 2 stages. First, parents are encouraged to establish a more positive relationship with their child through the use of praise and attention, while at the same time ignoring less problematic inappropriate behaviors. The second stage of the program involves teaching parents how to use more effective commands to gain compliance and also how to use time-out procedures appropriately. Parents are taught these skills in a step-by-step fashion, requiring parents to successfully learn each new skill before learning the next.

A third program designed to treat children with noncompliance and other conduct problems in children 3 years to 8 years was developed by Webster-Stratton (www.incredibleyears.com).[74] This program (BASIC) makes use of videotape modeling and parent discussion groups to teach parents appropriate ways of interacting with their children. The 250 vignettes presented on the videotapes show therapists modeling effective parenting techniques to a group of parents. After viewing the vignettes, a therapist leads a discussion with the parent group, focusing on the parent-child interaction that they previously viewed. Therapists work only with the parents, and then parents are encouraged to try the parenting techniques at home through the use of homework assignments.

The specific parenting practices taught in the BASIC program are similar to the 2 programs previously presented and the many parenting programs modeled after them. BASIC focuses on 4 areas of parenting: how to appropriately play with a child, appropriate praise and reward, effective limit setting, and how to handle misbehavior using time-out procedures. Parents are encouraged to play with their children, and in doing so self-monitor and shape their own behavior as a way of making play time more productive for the child. Among other specifics, parents are encouraged to provide sufficient attention to the child during play and to avoid power struggles. During the praise and reward phase of the program, parents are taught to give praise for appropriate behavior and also for approximations of desired behaviors instead of praising only perfection. Parents are also taught how to use a star and chart system for providing rewards and how to carry out point programs by giving stars immediately following appropriate behaviors while at the same time providing praise that is specific to the desired behavior. Parents are also taught the importance of giving unexpected rewards. To help parents effectively set limits with their children, parents are encouraged to first identify the most important rules of the house and then how to issue appropriate commands to achieve compliance. In addition, parents are shown how to issue commands with appropriate frequency that are simple and clear

while also following through with those commands using helpful reminders. Parents are also taught to ignore inappropriate responses to commands.

This program and the 2 previously discussed also rely heavily on the use of time-out procedures as a means of decreasing noncompliance. Roberts et al[75] found time-out procedures to be effective at reducing child noncompliance independent of other parental effects such as attention. When a child is placed in time-out, some means of keeping them there is needed, and the child must meet some predetermined requirement to achieve release. Release contingencies come in 3 forms: time contingent, in which the child simply remains in time-out for a predetermined period of time; 2 to 5 minutes; and behavior-time contingent, in which the child must not engage in disruptive behaviors for some length of time usually 5 seconds to 2 minutes.[76] Children can also be instructed that they may leave time-out when they feel as though they can behave appropriately and comply with parental requests. Bean and Roberts[76] investigated the differential effectiveness of both child release and parental release (behavior-time) contingencies and found that both significantly decreased child noncompliance, although there were major differences in the average time-out length, with the child-release being much shorter. However, the parental release group was significantly more compliant than the child release group.

Each of these programs has been shown to be effective at reducing child behavior problems including noncompliance within the first 3 years after treatment,[57,77–83] with 1 study reducing noncompliance from a baseline of 65% to 15% after treatment.[84] There has also been evidence to suggest that treatment effects from these and other programs aimed at reducing noncompliance generalize to the classroom when outcome is measured using teacher report,[85] although classroom effects from parent training programs are by no means consistently found.[86] Findings also suggest that treatment effects can generalize to other behavior problems such as aggression[83,87] and to improvements in the behavior of siblings of the target child[88] for up to a year following treatment.[89] Although these and other parent training programs aimed at reducing noncompliance in children have demonstrated short-run effectiveness, there has been a paucity of follow-up studies that have documented the long-term effects of these interventions. Baum and Forehand[77] reported positive effects for up to 4.5 years after treatment. However, studies from other parent treatment programs have consistently failed to find longer-lasting effects.[5]

Each of the interventions we reviewed were specifically designed to treat child noncompliance. However, there are several limitations to these parenting programs. Child noncompliance is often only one of several behavior problems that are displayed by children. Consequently, many programs that have been designed to treat other childhood behavior problems (eg, aggression) and family functioning issues that are exacerbated by child noncompliance also address noncompliance as part of treatment. The specific aims of these programs include treating aggression, serious antisocial and delinquent behavior, drug and alcohol problems, emotional problems, poor academic performance, negative family relationships and interactions, and improving child health and social functioning.[90] To assess which treatments are most appropriate for any given child, practitioners must not only evaluate how noncompliant the child is, but also the relationship between the child's noncompliant behavior and the context of other behavior problems such as aggression and impulsivity. In determining for whom it is most appropriate to recommend a parenting program, pediatricians should refer to the criteria for impairment associated with noncompliance presented in Table 1. Each area of impairment describes how noncompliance can affect child functioning; however, the criteria are simply guidelines and have not been empirically investigated. For those children whose noncompliant behavior is causing impairment in at least one of these areas, a closer exploration of the parenting practices being used is recommended. For those children experiencing impairment in more than one area, a referral to some type of parenting program should be strongly considered. However, given that child noncompliance is so frequently presented to practitioners as problematic, especially in young children, practitioners may be wise to first introduce some of the basic tips on child discipline to the parents and observe their effectiveness before prescribing more intense parent training. Recently, a number of Web sites describing positive discipline techniques have been established which parents can be directed toward or practitioners can print materials from. Two such sites that parents may find helpful are www.amazingbaby.com and www.aap.org/policy/re9740.html. These sites describe a number of positive parenting techniques contained in many of the treatment programs for noncompliance. However, the effectiveness of these web sites has not been empirically evaluated, and as always before directing parents to these or other forms of parenting materials, it is important to first examine the materials for their accuracy of information and their appropriateness for any given patient.

CONCLUSION

Child noncompliance is a frequent problem for parents and pediatricians, often presented to mental health practitioners as especially troublesome. Practitioners then have much to gain by having at least a general understanding of those factors which most influence child noncompliance. The upsurge of child noncompliance research conducted over the last few decades can be very informative. When practitioners see a family for whom child noncompliance is a problem, they will increase their effectiveness by incorporating this knowledge into both the assessment of and intervention to reduce children's noncompliance.

Assessment should include evaluation of exactly how the child is being noncompliant (what specific types of commands he or she is not complying with)

and the setting (home or school) in which it typically occurs. Determining whether or not the child is noncompliant for all or only specific adults can also shed light on possible reasons for noncompliance. Key to any evaluation of child noncompliance is determining the means by which parents are choosing to discipline their child. Research findings reviewed show the importance of parents issuing commands in the most effective manner and the benefits of choosing appropriate rewards for compliance and consequences for noncompliance. Expectations that parents have for compliance can vary considerably, which means that it is important to evaluate those expectations for their appropriateness considering where the child is developmentally and his or her cognitive and physical abilities.

As a means of assessment, practitioners have a number of tools at their disposal. Detailed interviewing of both parents and child can provide an overall picture of the problem at home. Teachers and others working with the child should also be interviewed to not only understand how the child may be noncompliant in other settings, but also because these people usually come in contact with many more children than the average parent, which make them valuable informants when assessing how normative or nonnormative a child's noncompliant behavior may be.

Certainly, direct observation can provide insight into the dynamics of the parent-child relationship that can often not be gained from interviews. This can be done either separately or simultaneously during interviews with the parent. For smaller children, practitioners should feel free to conduct a version of the clean-up task, whereas for older children interviews with both parents and child will be more informative. Practitioners are encouraged to not only ask many questions of parents but also of children as well to get a sense of how parents discipline their child, how clearly and consistently consequences and incentives are presented, and how much agreement there is between parents when disciplining their child. Interviewing the child becomes more informative as the child's cognitive abilities increase with age, and observation in the home or other settings such as school can be helpful. Although clearly there is a need for a more accurate and standardized way of measuring noncompliance in older children, observations of how parents and child interact in the clinic setting can still be very helpful.

Research findings also highlight the importance of determining how persistent the noncompliance is, and if it has been temporally linked to recent changes in the family situation such as a death of a relative, the arrival of a new sibling, or other life events. Practitioners should pay special attention to those persistent noncompliant children who are beyond their seventh birthday, given that this may indicate more severe future behavior problems. Finally, children who are persistently noncompliant and who are given some type of intervention should also be closely monitored for the purpose of evaluating the effectiveness of the intervention.

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REFERENCES

1. Forehand RL, McMahon RJ. *Helping the Noncompliant Child: A Clinician's Guide to Parenting.* New York, NY: Guildford Press; 1981
2. Patterson GR. Interventions for boys with conduct problems: multiple settings, treatments, and criteria. *J Consult Clin Psychol.* 1974;42:471–481
3. Bernal ME, Klinnert MD, Schultz LA. Outcome evaluation of behavioral parent training and client-centered parent counseling for children with conduct problems. *J Appl Behav Anal.* 1980;13:677–691
4. Forehand R. Child noncompliance to parental requests: behavioral analysis and treatment. In: Hersen M, Eisler RM, Miller PM, eds. *Progress in Behavior Modification.* Vol 5. New York, NY: Academic Press; 1977: 295–343
5. Houlihan D, Sloane HN, Jones RN, Patten C. A review of behavioral conceptualizations and treatments of child noncompliance. *Education and Treatment of Children* 1992;15:56–77
6. Kochanska G, Aksan N, Koenig AL. A longitudinal study of the roots of preschoolers' conscience: committed compliance and emerging internalization. *Child Dev.* 1995;66:1752–1769
7. Wenar C. On negativism. *Hum Dev.* 1982;25:1–23
8. Lamb ME. Predictive implications of individual differences in attachment. *J Consult Clin Psychol.* 1987;55:817–824
9. Koot HM, Verhulst FC. Prevalence of problem behavior in Dutch children aged 2–3. *Acta Psychiatr Scand.* 1991;83:1–37
10. Webster-Stratton C. Intervention approaches for conduct disorders in young children. *Nurse Pract.* 1983;23–34
11. Roberts MW, Powers SW. The compliance test. *Behav Assess.* 1988;10: 375–398
12. Kuczynski L, Kochanska G, Radke-Yarrow M, Girnius-Brown O. A developmental interpretation of young children's noncompliance. *Dev Psychol.* 1987;23:799–806
13. Kochanska G, Kuczynski L, Maguire M. Impact of diagnosed depression and self-reported mood on mothers' control strategies. *J Abnorm Psychol.* 1989;17:493–511
14. Hoffman ML. Moral internalization: current theory and research. In: Berkowitz L, ed. *Advances in Experimental Social Psychology*. Vol 10. New York, NY: Academic Press; 1977
15. Kuczynski L, Kochanska G. Development of children's noncompliance strategies from toddlerhood to age 5. *Dev Psychol.* 1990;26:398–408
16. Vaughn BE, Kopp CB, Krakow JB. The emergence and consolidation of self-control from eighteen to thirty months of age: normative trends and individual differences. *Child Dev.* 1984;55:990–1004
17. Achenbach TM, Edelbrock CS. *Manual for the Child Behavior Checklist and Revised Child Behavior Profile.* Burlington, VT: University of Vermont; 1983
18. Davie R, Butler N, Goldstein H. *From Birth to Seven: The Second Report of the National Child Development Study (1958 Cohort).* New York, NY: Longman; 1972
19. Griffiths W. *Behavior Difficulties of Children as Perceived and Judged by Parents, Teachers, and Children Themselves.* Minneapolis, MN: University of Minnesota Press; 1952
20. Heinstein M. Behavior problems of young children. Berkeley, CA: State of California, Department of Public Health, Bureau of Maternal and Child Health; 1969
21. Verhulst FC, Akkerhuis GW, Althaus M. Mental health in Dutch children: (I) a cross cultural comparison. *Acta Psychiatry Scand.* 1985; 72(suppl):1–108
22. Loeber R, Farrington DP, Stouthamer-Loeber M, Van Kammen WB. *Antisocial Behavior and Mental Health Problems: Explanatory Factors in Childhood and Adolescence.* Mahwah, NJ: Lawrence Erlbaum Associates; 1998
23. Achenbach TM, Edelbrock CS. Behavioral problems and competencies reported by parents of normal and disturbed children aged four through sixteen. *Monogr Soc Res Child Dev.* 1981;46:1–82
24. Verhulst FC, Koot HM, van der Ende J. Differential predictive value of parents' and teachers' reports of children's problem behaviors: a longitudinal study. *J Abnorm Psychol.* 1994;22:531–546
25. Shechtman A. Psychiatric symptoms observed in normal and disturbed children. *J Clin Psychol.* 1970;26:38–41
26. DeBlois CS, Stewart MA. Aggressiveness and antisocial behavior in children: their relationships to other dimensions of behavior. *Res Commun Psychol Psychiatry Behav.* 1980;5:303–312
27. Parrish JM, Cataldo MF, Kolko DJ, Neef NA, Egel AL. Experimental

analysis of response covariation among compliant and inappropriate behaviors. *J Appl Behav Anal*. 1986;19:241–254
28. Keenan K, Shaw DS. The development of aggression in toddlers: a study of low-income families. *J Abnorm Psychol.* 1994;22:53–77
29. Shaw DS, Keenan K, Vondra JI. The developmental precursors of antisocial behavior: ages 1–3. *Dev Psychol.* 1994;30:355–364
30. Shaw DS, Winslow EB, Owens EB, Vondra JL, Cohn JE, Bell RQ. The development of early externalizing problems among children from low-income families: a transformational perspective. *J Abnorm Psychol.* 1998;26:95–107
31. Tolan PH, Guerra N, Kendall PC. A developmental-ecological perspective on antisocial behavior in children and adolescents: toward a unified risk and intervention framework. *J Consult Clin Psychol.* 1995;63:579–584
32. Loeber R, Hay D. Key issues in the development of aggression and violence from childhood to early adulthood. *Annu Rev Psychol.* 1997;48: 371–410
33. Loeber R, Wung P, Keenan K, et al. Developmental pathways in disruptive child behavior. *Dev Psychopathol.* 1993;5:103–133
34. Loeber R, Lahey BB, Thomas C. Diagnostic conundrum of oppositional defiant disorder and conduct disorder. *J Abnorm Child Psychol.* 1991;100: 379–390
35. Loeber R, Stouthamer-Loeber M. Development of juvenile aggression and violence: some common misconceptions and controversies. *Am Psychol.* 1998;53:242–259
36. Hämäläinen M, Pulkkinen L. Problem behavior as a precursor of male criminality. *Dev Psychopathol.* 1996;8:443–445
37. Kalb LM. Child noncompliance as a predictor of adolescent delinquency: a longitudinal study. Poster presented at the Society for Research in Child Development; April 19–22, 2001; Minneapolis, MN
38. Campbell SB. Hard-to-manage preschool boys: externalizing behavior, social competence, and family context at two-year follow-up. *J Abnorm Psychol.* 1994;22:147–166
39. Campbell SB, Pierce EB, Moore G, Marakovitz S, Newby K. Boys' externalizing problems at elementary school age: pathways from early behavior problems, maternal control, and family stress. *Dev Psychopathol.* 1996;8:701–719
40. Patterson GR. Changes in status of family members as controlling stimuli: a basis for describing treatment process. In: Hamerlynck LA, Handy LC, Mash EJ, eds. *Behavior Change: Methodology, Concepts and Practice.* Champaign, IL: Research Press; 1973:169–191
41. Lutzker JR, McGimsey JF, McRae S, Campbell RV. Behavioral parent training: there's so much more to do. *Behav Therapist.* 1983;6:110–12
42. Chamberlain P, Patterson PR. Discipline and child compliance in parenting. In: Bornstein M, ed. *Handbook of Parenting.* Vol 4. Mahwah, NJ: Lawrence Erlbaum Associates; 1995:205–225
43. Rothbaum F, Crockenberg S. Maternal control and two-year-olds' compliance and defiance. *Int J Behav Dev.* 1995;18:193–210
44. Wahler RG, Dumas JE. Maintenance factors in coercive mother-child interactions: the compliance and predictability hypothesis. *J Appl Behav Anal.* 1986;19:13–22
45. Schaffer HR, Cook CK. Child compliance and maternal control techniques. *Dev Psychol.* 1980;16:54–61
46. Stayton D, Hogan R, Ainsworth MDS. Infant obedience and maternal behavior: the origins of socialization reconsidered. *Child Dev.* 1971;42: 1057–1069
47. Parpal M, Maccoby EE. Maternal responsiveness and subsequent child compliance. *Child Dev.* 1985;56:1326–1334
48. Martin JA. A longitudinal study of the consequences of early mother-infant interactions: a microanalytic approach. *Monogr Soc Res Child Dev.* 1981;46:1–58
49. Braine LG, Pomerantz E, Lorber D, Krantz DH. Conflicts with authority: children's feelings, actions, and justifications. *Dev Psychol.* 1991;27: 829–840
50. Smith TE. Adolescent reactions to attempted parental control and influence techniques. *J Marriage Fam.* 1983;8:533–542
51. Straus MA. Discipline and deviance: physical punishment of children and violence and other crime in adulthood. *Soc Probl* 1991;38:133–152
52. Chapman M, Zahn-Waxler C. Young children's compliance and noncompliance to parental discipline in a natural setting. *Int J Behav Dev.* 1982;5:81–94
53. Elder GH, Caspi A, Cross CE. Parent-child behavior in the great depression: life course and intergenerational influences. In: Baltes PB, Brim OG, eds. *Life Span Development and Behavior*. Vol 6. New York, NY: Academic Press; 1984:109–158
54. Dumas JE, Lechowicz JG. When do noncompliant children comply? Implications for family behavior therapy. *Child Fam Behav Ther.* 1989; 11:21–38
55. Wruble MK, Sheeber LB, Sorensen EK, Boggs SR, and Eyberg S. Empirical derivation of child compliance time. *Child Fam Behav Ther.* 1991; 13:57–68
56. Forehand R, Gardner H, Roberts M. Maternal response to child compliance and noncompliance: some normative data. *J Clin Child Psychol.* 1978;2:121–124
57. Peed S, Roberts M, Forehand R. Evaluation of the effectiveness of a standardized parent training program in altering the interaction of mothers and their noncompliant children. *Behav Modif.* 1978;1:323–350
58. Elrod MM. Young children's responses to direct and indirect directives. *J Genet Psychol.* 1983;143:217–227
59. Shatz M. How to do things by asking: form-function pairings in mothers' questions and their relation to children's responses. *Child Dev.* 1979;50:1093–1094
60. Elrod MM. Children's understanding of indirect requests. *J Genet Psychol.* 1987;148:63–70
61. Campbell SB, Pierce EW, March CL, Ewing LJ. Noncompliant behavior, over activity, and family stress as predictors of negative maternal control with preschool children. *Dev Psychopathol.* 1991;3:175–190
62. Maccoby EE, Martin JA. Socialization in the context of the family: parent-child interaction. In: Hetherington EM, ed. *Mussen Manual of Child Psychology.* Vol 4. 4th ed. New York, NY: Wiley; 1983:1–102
63. Grusec JE, Kuczynski L. Direction of effect in socialization: a comparison of the parent's versus the child's behavior as determinants of disciplinary techniques. *Dev Psychol.* 1980;16:1–9
64. Williams CA, Forehand R. An examination of predictor variables for child compliance and noncompliance. *J Abnorm Psychol.* 1984;12:491–504
65. Gomez R, Sanson AV. Mother-child interactions and noncompliance in hyperactive boys with and without conduct problems. *J Child Psychol Psychiatry.* 1994;35:477–490
66. Cunningham CE, Barkley RA. The interactions of normal and hyperactive children with their mothers in free play and structured tasks. *Child Dev.* 1979;50:215–224
67. Mash EL, Johnson C. A comparison of mother-child interactions of younger and older hyperactive and normal children. *Child Dev.* 1982; 53:1371–1381
68. Lytton H. Two-way influence processes between parents and children, when, where and how? *Can J Behav Sci.* 1982;14:259–275
69. McMahon RJ, Wells KC. Conduct problems. In: Mash EJ, Barkley RA, eds. *Treatment of Childhood Conduct Disorders.* New York, NY: Guilford Press; 1998:111–207
70. Patterson GR. *Coercive Family Process.* Eugene, OR: Castilia; 1982
71. Patterson GR, Reid JB, Jones RR, Conger RW. *A Social Learning Approach to Family Intervention*. Vol 1. Eugene, OR: Castalia; 1975
72. Patterson GR. *Living With Children, New Methods for Parents and Teachers (revised ed.).* Eugene, OR: Castalia; 1976
73. Patterson GR. *Families: Applications of Social Learning to Family Life (revised ed.).* Eugene, OR: Castalia; 1975
74. Webster-Stratton C. Videotape modeling intervention programs for families of young children with oppositional defiant disorder or conduct disorder. In: Hibbs ED, Jensen, PS, eds. *Psychosocial Treatment Research of Child and Adolescent Disorders: Empirically Based Strategies for Clinical Practice.* Washington, DC: American Psychological Association; 1996:435–474
75. Roberts MW, Hatzenbuehler LC, Bean AW. The effects of differential attention and time out on child noncompliance. *Behav Ther.* 1981;12: 93–99
76. Bean AW, Roberts MW. The effect of time-out release contingencies on changes in child noncompliance. *J Abnorm Psychol.* 1981;9:95–105
77. Baum CG, Forehand R. Long-term follow-up assessment of parent training by use of multiple-outcome measures. *Behav Ther.* 1981;12: 643–652
78. Fleischman MJ. A replication of Patterson's "Intervention for boys with conduct problems." *J Consult Clin Psychol.* 1981;49:342–351
79. Patterson GR, Fleischman MJ. Maintenance of treatment effects: some considerations concerning family systems and follow-up data. *Behav Ther.* 1979;10:168–185
80. Patterson GR, Forgatch MS. Predicting future clinical adjustment from treatment outcome and process variables. *Psychol Assess.* 1995;7:275–285
81. Taplin PS, Reid JB. Changes in parent consequation as a function of family intervention. *J Consult Clin Psychol.* 1977;45:973–981
82. Webster-Stratton C. Long-term follow-up of families with young conduct problem children: from preschool to grade school. *J Clin Child Psychol.* 1990;19:144–149
83. Webster-Stratton C. Randomized trial of two parent-training programs for families with conduct-disordered children. *J Consult Clin Psychol.* 1984;52:666–678
84. Forehand R, King HE. Noncompliant children: effects of parent training on behavior and attitude change. *Behav Modif.* 1977;1:93–108

85. Serketich WJ, Dumas JE. The effectiveness of behavioral parent training to modify antisocial behavior in children: a meta-analysis. *Behav Ther*. 1996;27:171–186
86. McMahon RJ. Parent training. In: Russ SW, Ollendick TH, eds. *Handbook of Psychotherapies With Children and Families*. New York, NY: Kluwer Academic/Plenum; 1999:153–180
87. Wells KC, Forehand R, Griest DL. Generality of treatment effects from treated to untreated behaviors resulting from a parent training program. *J Clin Child Psychol*. 1980;9:217–219
88. Humphreys L, Forehand R, McMahon R, Roberts M. Parent behavioral training to modify child noncompliance: effects on untreated siblings. *J Behav Ther Exp Psychiatry*. 1978;9:235–238
89. Arnold JE, Levine AG, Patterson GR. Changes in sibling behavior following family intervention. *J Consult Clin Psychol*. 1975;43:683–688
90. Kumpfer KL. *Strengthening America's Families: Exemplary Parenting and Family Strategies for Delinquency Prevention*. Washington, DC: US Department of Justice, Office of Juvenile Justice and Delinquency Prevention; 1999

RISK OF CEREBRAL PALSY

"The rate of cerebral palsy is strongly associated with weight at birth. The rate of cerebral palsy per 1000 babies to survive the first 28 days of life is 70 to 80 times greater in babies weighing less than 1000 grams than in those weighing 2500 grams or more at birth."

Oxford Register of Early Childhood Impairments. *Annual Report*. 2001

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